

Lake Living: Design of a Small Lake Home

An Honors Thesis (HONRS 499)

by

Nicole Rose Miller

Thesis Advisor
Janice Shimizu

A handwritten signature in black ink, appearing to read "Janice Shimizu", written in a cursive style.

Ball State University
Muncie, Indiana

May 2012

Expected Date of Graduation

May 2012

Abstract

There is a growing trend in the construction of enormous mansions on Indiana's lakes. The lake is becoming a more and more popular destination for the wealthy, as revealed by the size of the structures. One should question the need for this excessive space. My thesis explores how the luxuries of the lake mansion can exist in a much smaller home. Through an architectural design for my family's lakefront site, I attempt to convey the advantage of small-scale architecture to a world that seems increasingly obsessed with excess. The design emphasizes the connection to nature and site. It serves as an investigation in varying degrees of privacy, flexible designs, and compact spaces.

Acknowledgements

I would like to thank Janice Shimizu for advising me through the project. Our meetings provided the motivation to complete this endeavor. I would also like to thank Mom and Dad for serving as my clients.

Author's Statement

The site is a lakefront lot in Wolcottville, Indiana. It sits on the Indian Chain of Lakes, a chain of five small lakes in northern Indiana. My parents own the lot, and they served as my "clients" throughout the project. A 1963 Windsor trailer presently occupies the site. The current zoning no longer allows mobile homes on the lakefront. Therefore, it is allowed to exist only because it has been grandfathered in. If, for instance, the trailer were to blow over in a storm, the client would not be allowed to set it back in place. What would replace the trailer in an instance such as this one?

The current trend on local lakes is to replace old lake cottages with giant, luxurious weekend homes. The new homes tend to be increasing in size with each new one that is built. Our lakes are becoming dotted with mansions that overwhelm their neighbors.

Lake home owners must understand that increasing the size of a house does not necessarily make it better, nor does it enhance the lake experience. On a summer visit to the lake, one often spends the large majority of their time outdoors. The house becomes secondary to the lakefront porch, lawn, or beach. Large interior spaces are excessive and unnecessary.

My goal was to design a compact and efficient dwelling for the lakefront site that would fulfill all of the clients' needs with a minimum square footage and cost. The design emphasizes what I find most important at the lake: the natural outdoor environment. The boundary between indoor and outdoor space is transparent and removable to make the small home feel much larger. Outdoor spaces are equally as important as indoor spaces. This flexible cottage design offers the client various levels of privacy and enclosure with a strong connection to nature.

The design process consisted of the following phases:

- Programming
- Site Analysis
- Precedent Research
- Conceptual Design
- Schematic Design
- Design Development
- Presentation

Programming

Building Program:

The Program serves as a guide to the design process. I worked closely with the clients to define their needs and wants. We discussed the various uses of the site and structure, identifying potential problems and concerns. The program serves as a basic starting point for the design. The following program outline was created:

Single Family Lakefront Cottage to accommodate 2 residents and guests

Design Considerations:

Natural Light, Natural Ventilation, Views of Nature, Visual & Acoustic Privacy,
Minimal Square Footage

- Master bedroom + guest beds
- 1-2 Bath
- Kitchen
- Living Space
- Small Home Office
- Single Car Enclosed / Semi-Enclosed Parking
- Screened Porch
- Indoor / Outdoor Growing Space
- Indoor / Outdoor Storage: Garden Equipment, Kayaks, Fishing Gear, Lifejackets
- Yard including:
 - o Outdoor Cooking and Dining
 - o Campfire Space
 - o Piers and Boat Parking
 - o No-Maintenance Deck
 - o Sunset Viewing Area
 - o Privacy from Neighbors
 - o Shared space with Junebug

Character of Space:

Defining the tangible features of the structure was only part of the programming phase. It was also important to discover the desired quality of the space. This process involved extensive client input. I arranged multiple points during the design process to allow client input and feedback. This particular activity offered the client direct and hands-on involvement. We began with a large collection of magazines covering topics such as Home Design, Gardening, Lakes, Art, and Decorating. The instructions were as follows: “cut out anything that makes you happy, and include anything you would like to have in your dream space.” The main purpose of this activity was to generate excitement about the design. It allowed the client to actively participate and consider what makes them happy. This activity focused on the character of the space, not exact designs. Together, we questioned, “How do you want to feel in the space?” The photos collected addressed this feeling.

Not only was this activity helpful for the project, it was a fun evening spent with my Mom and Grandma. We ate popcorn, and had fun, light-hearted conversation as we skimmed through piles of magazines. Afterward, I collected the stacks of magazine clippings and combined them into four poster collages. The collages were organized into categories. I titled them “The Hidden Garden,” “Relaxation,” “Blurring the Boundary,” and “Lake Time.” The ideas generated in this activity were later applied to design concept diagrams.

1

The Hidden Garden

- Privacy Fences, Garden Gates, Outdoor Cooking, Chickens
- How to provide privacy without obstructing lake views?
- How does a garden connect to cooking?



2

Relaxation

- Hammocks, Yoga, Birds
- “Spirit” – What is the ideal setting to get in touch with your inner spirit?
- Lighting – How can one create a space with only light and shadow?



3

Blurring the Boundary

- Porches, Umbrellas, Outdoor Dining, Comfort
- Can spaces change between indoor and outdoor?
- Consider the Transition from indoors to out. Is it linear?
- What are the “in-between” spaces?



4

Lake Time

- Turtles retreat to a protective shell at night. How can a house mimic a turtle?
- What is the connection to the water?



Site Analysis

Location:

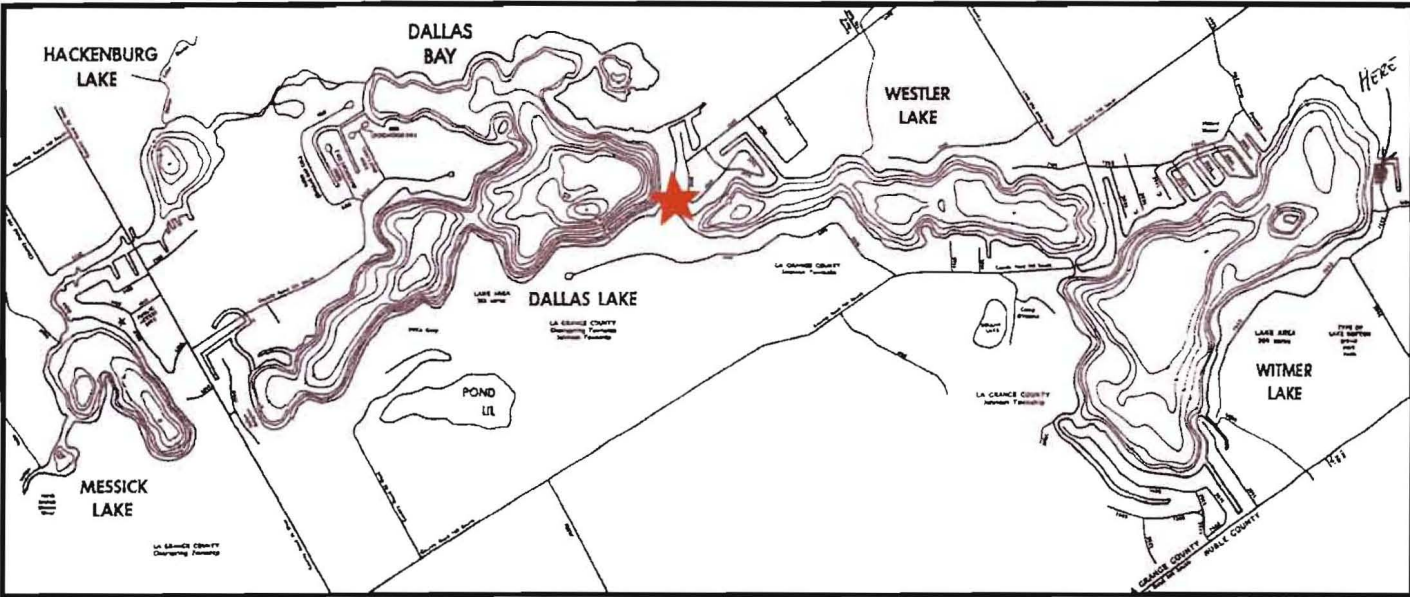
The site is located near the small town of Wolcottville, Indiana. It sits on the Indian Chain of Lakes, a chain of five small lakes in northern Indiana. The lot is located partially on the channel connecting Dallas Lake and Westler Lake.

Hackenburg Lake: 42 Acres
Messick Lake: 68 Acres
Dallas Lake: 283 Acres
Westler Lake: 88 Acres
Witmer Lake: 204 Acres



Indian Chain of Lakes Map

LaGrange County, Indiana



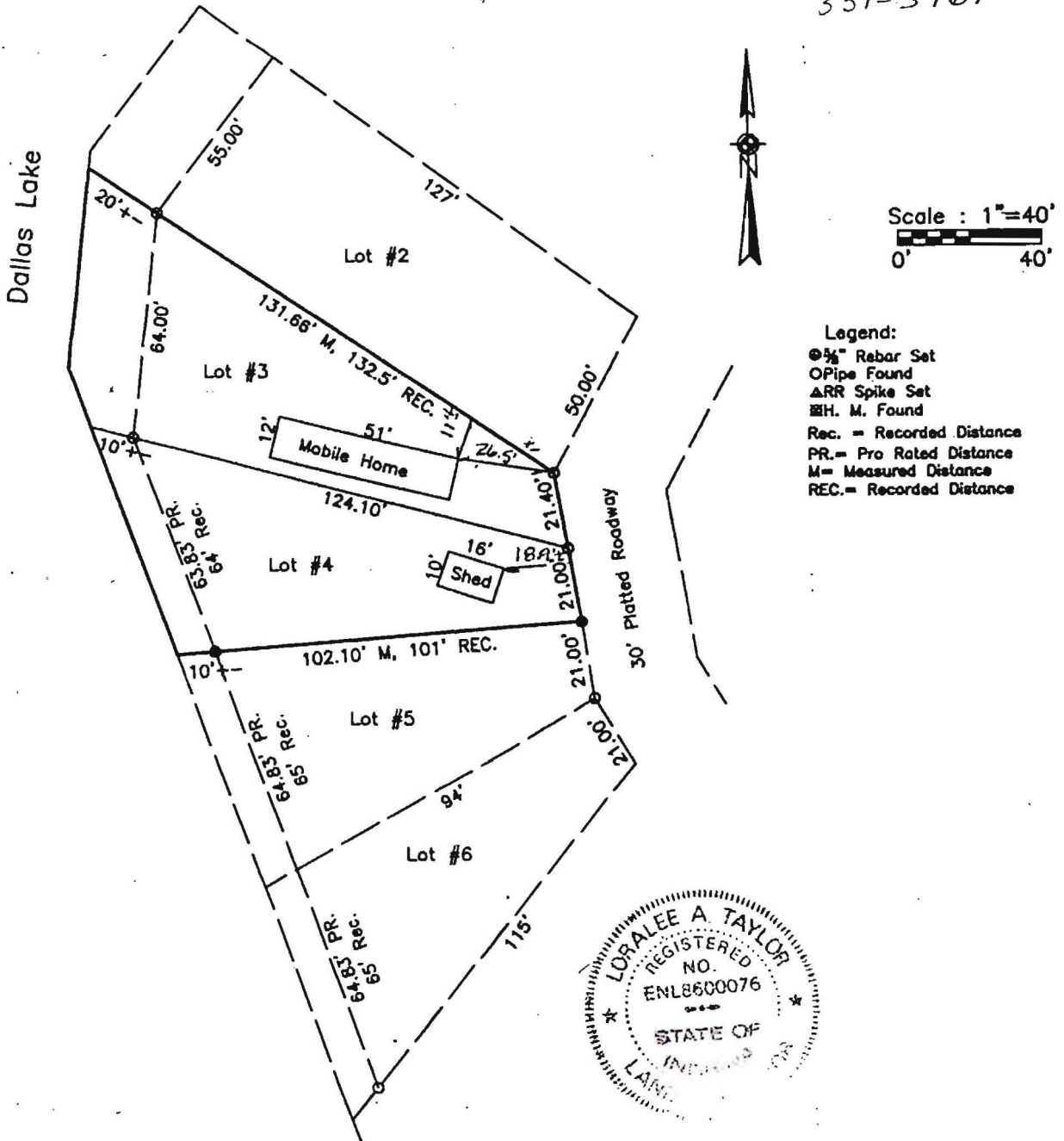
Site: Channel between Dallas and Westler Lake

Survey:

Prepared For:
John Roush
6540 S. 070 E.
Walcottville, IN 46795

Prepared By:
Taylor Engineering Co. Inc.
11135 E. 100 S.
LaGrange, IN 46761

351-3467

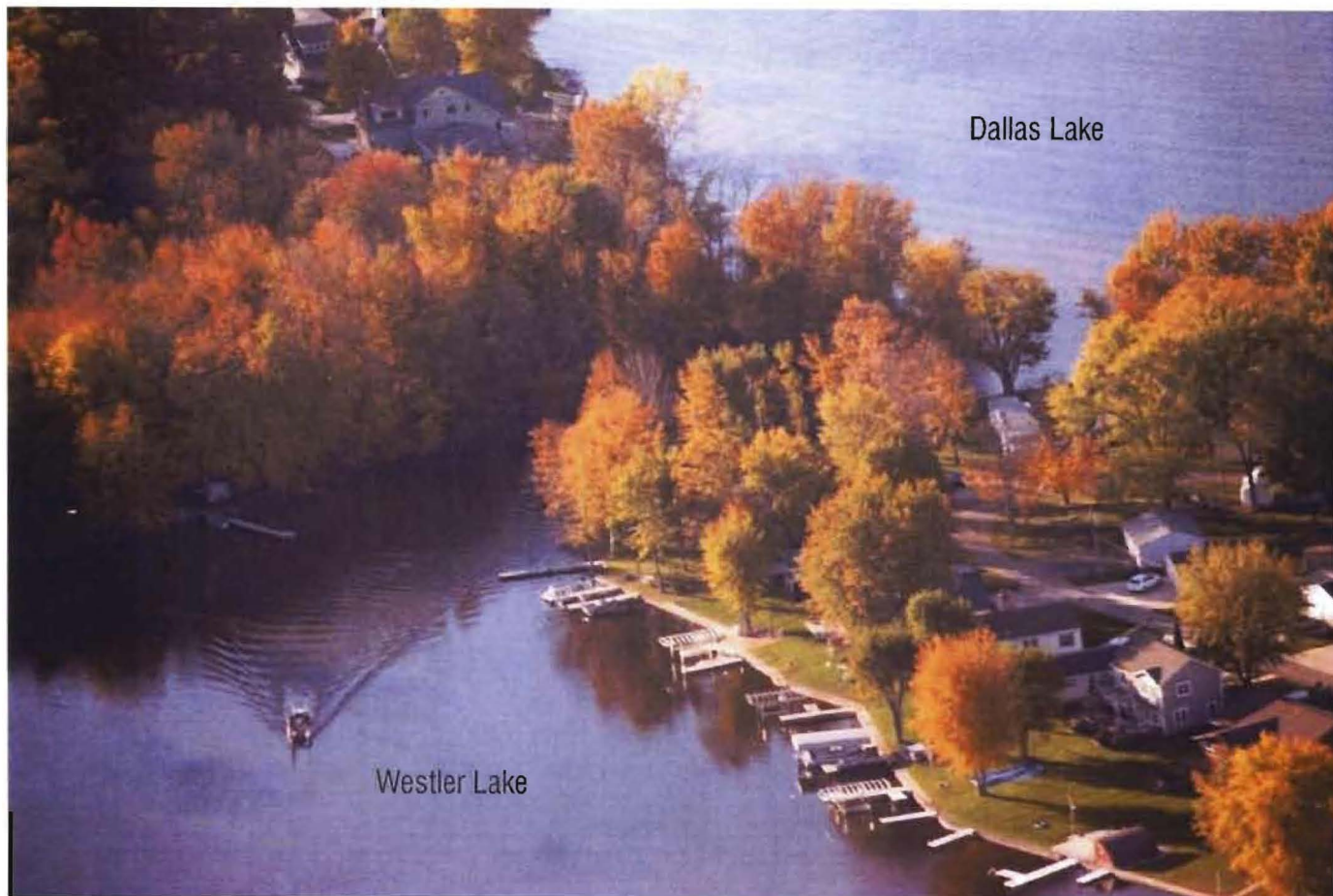


LEGAL DESCRIPTION:

Lots # 3 and # 4 in Wynkoop's 1st addition to Wynkoops Subdivision, Section 30, Township 36 North, Range 10 East, Johnson Township, LaGrange County, Indiana, recorded in Plat Book 3, Page 12, in the office of the recorder in said county. Subject to all easements and rights-of-way of record.

FLOOD STATEMENT: According to FIRM #180125 0004B, portions of the above described real estate immediately adjacent to the Dallas Lake channel are located in Zone A, a Special Flood Hazard Area.

SURVEYOR'S STATEMENT: No variances in the reference monuments, discrepancies in record descriptions and plats, or inconsistencies in lines of occupation



Privacy:

Privacy is a major concern on the site. At many lake homes, boat traffic happens in the distance. However, this site is partially channel-front, and boat traffic is very nearby, just a few feet from the water's edge. The boats also move past very slowly, at idle speeds. Boats travelling between Westler Lake and Dallas Lake must pass through, and the channel becomes very crowded in the summer. In this small town, a steady stream of boat traffic usually means many familiar faces passing by. This can be entertaining and fun, but it can also be a nuisance when one prefers privacy. The street traffic is minimal with a few vehicles and the occasional walkers.

The neighbors to the north often have large family gatherings with many small children. Privacy from these neighbors is desired. Given the current site conditions, a constant view of their yard is unavoidable. Their house sits just a few feet north of the lot line, and a large, generic gray facade with a few windows faces the site.

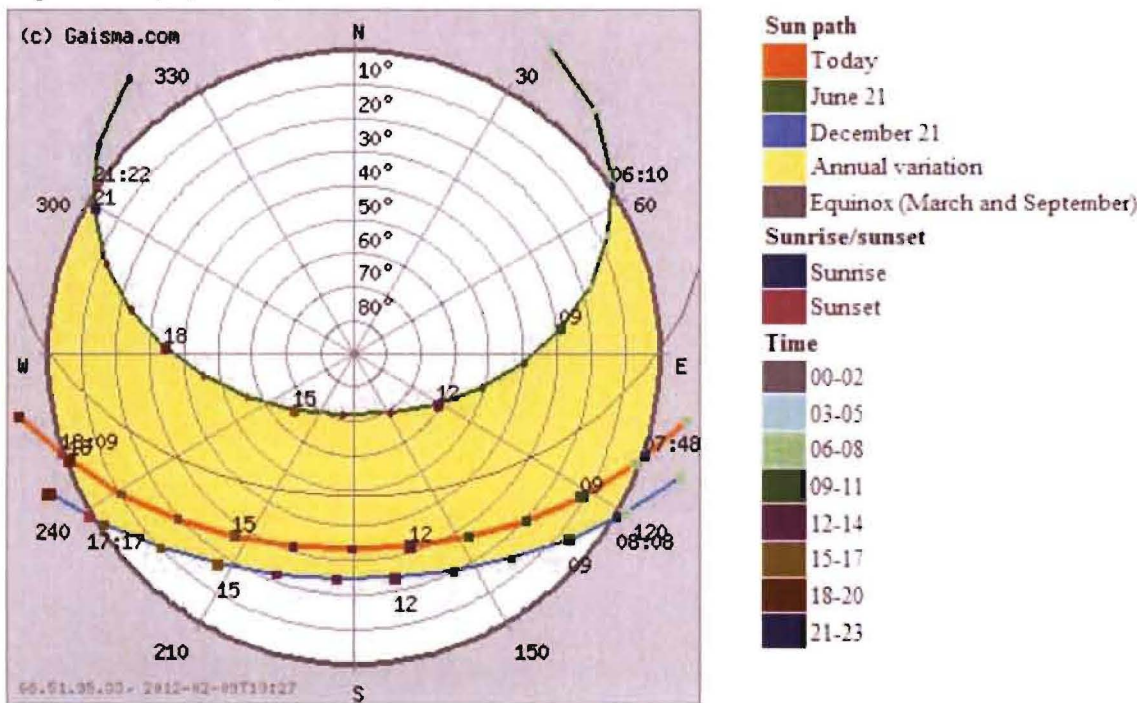
The neighbors to the south are relatives. They live in a very small cottage known as “the Junebug,” which is always surrounded by breathtaking flower gardens. Although there is sometimes a desire for privacy from the relatives, the yard is usually shared freely between the two residences.

Views:

The views out of the site are important design considerations. The sunset view is by far the most important of these views. The site’s “sunset point” is a sacred destination nearly every summer night to watch the setting sun illuminate the lake and sky. A sun path diagram was used to indicate the direction in which the sun sets at different times during the year.

Elkhart, Indiana, United States - Sun path diagram

<http://www.gaisma.com/en/location/elkhart-indiana.html>



Views:



Sunset View



View of Neighboring Junebug



View from Water: Existing Mobile Home and Neighbors to the North



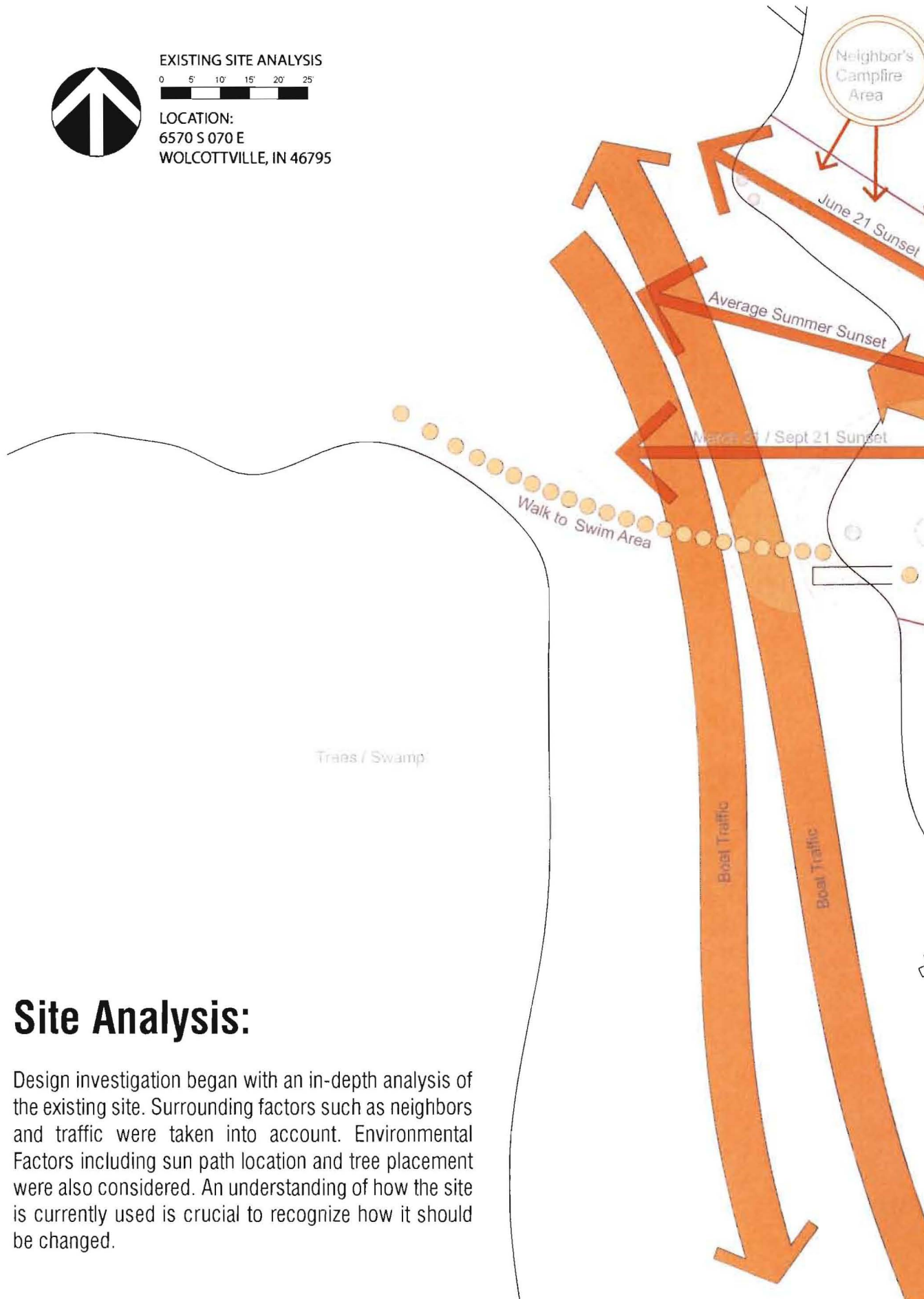
High-Density Boat Traffic



EXISTING SITE ANALYSIS

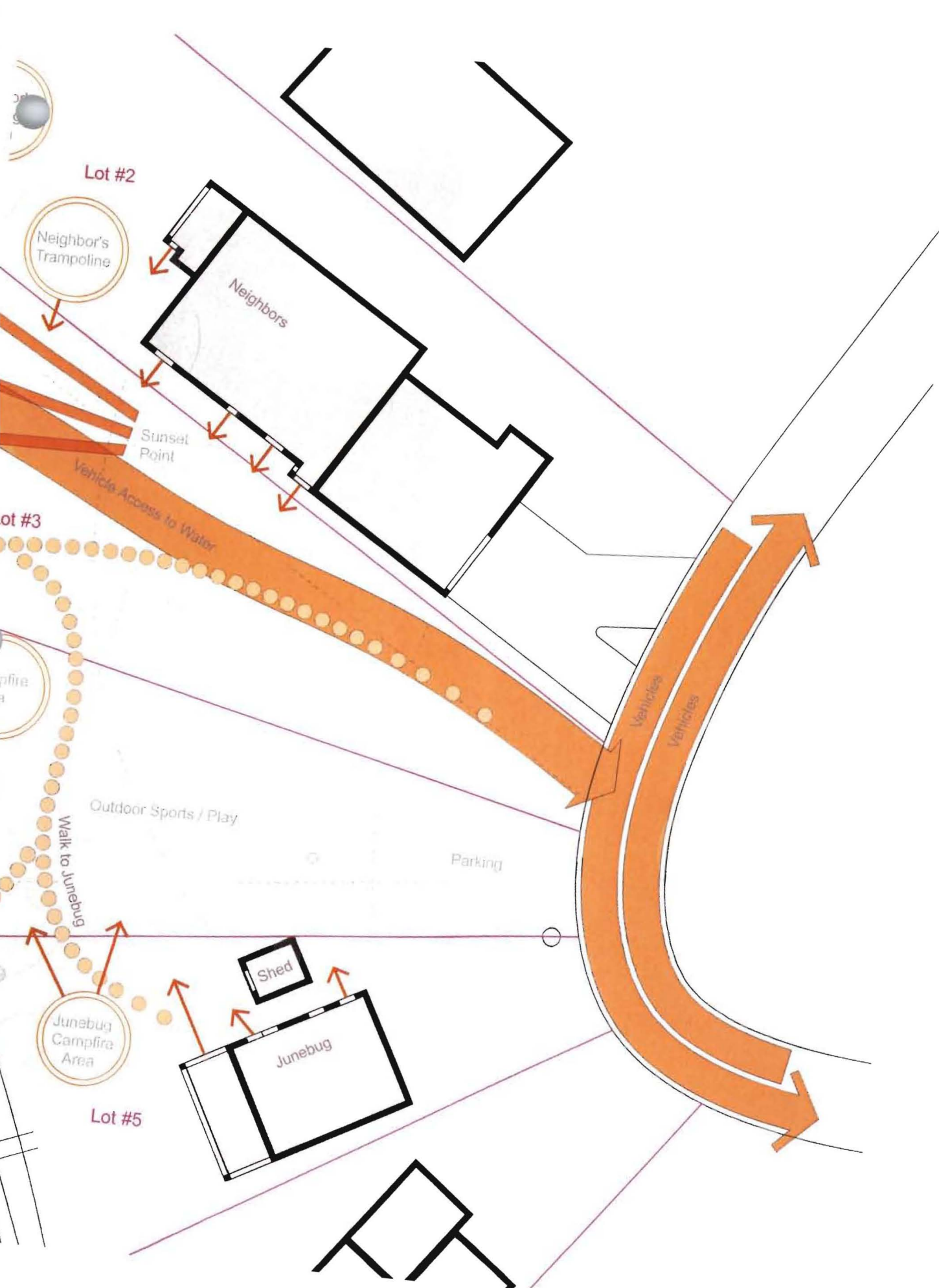
0 5' 10' 15' 20' 25'

LOCATION:
6570 S 070 E
WOLCOTTVILLE, IN 46795



Site Analysis:

Design investigation began with an in-depth analysis of the existing site. Surrounding factors such as neighbors and traffic were taken into account. Environmental Factors including sun path location and tree placement were also considered. An understanding of how the site is currently used is crucial to recognize how it should be changed.



Precedent Research

The following architectural structures were studied as precedents:

1

Johan Sundberg – Håkansson Tegman House

<http://www.modernarchitectureconcept.com/classic-architecture-hakansson-tegman-home-design-by-johan-sundberg/>



This structure demonstrates an interesting contemporary use of traditional materials. The narrow wood slats serve as both a solid wall surface as well as a semi-transparent screen. The wood wraps from wall to ceiling to create a folding formal language. The sliding wall panels along with the hinged folding wall offer flexibility in the degree of openness.

2

Mitsutomo Matsunami – Residence in Kishigawa

<http://www.archdaily.com/149796/residence-in-kishigawa-mitsutomo-matsunami/>



This home minimizes interior space by utilizing an outdoor room. Program is divided into small interior zones which are connected by this framed outdoor space. Separating the rooms provides visual and acoustic privacy in a very small living space. The close connection with nature makes compact rooms feel much more spacious.

3

Garrison Architects – Koby Cottage

<http://www.archdaily.com/119828/koby-cottage-garrison-architects/>



The floor plan of this home was inspiring. Its shape creates separate wings for work, sleep, and socializing. These wings join together at a central entrance and gathering point.



4

Herbstarchitects – Great Barrier Island

<http://www.archdaily.com/129540/great-barrier-island-herbstarchitects/>



This building's roof extends out to a thick stone wall, into which a fireplace is built. A covered outdoor space is thereby created. This "thick wall" concept does not have to include a fireplace. The wall could hypothetically incorporate any outdoor-related use: an outdoor kitchen, a garden work space, a yard storage area, a play space. The space between the thick wall and the building becomes a programmed area of outdoor use relating to the wall.



The following precedents demonstrate different ways in which walls can open to the exterior.

5 Juan Melo and Camilo Delgadillo – Bogota Tourist Information Spots

<http://www.archdaily.com/138549/bogota-tourist-information-spots-juan-melo/>

6 Daniel Bonilla – Capilla Colegia Los Nogales

<http://daniel-bonilla.com/menuproyectos.html>

7 The GR House – Bernardes + Jaconsen

<http://www.thecoolist.com/gr-house-by-bernardes-jacobsen/>



8

Olson Kundig – Chicken Point Cabin, Shadowboxx

<http://www.olsonkundigarchitects.com/Projects/101/Chicken-Point-Cabin>

9

Sullivan's Island – Rosenblum Coe Architects, Inc

<http://www.rosenblumcoe.com/sullivans-island-residential-architect>

10

Taylor Smyth Architects – Flashback: Sunset Cabin

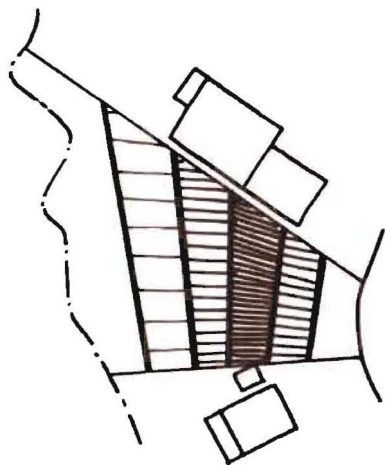
<http://www.archdaily.com/171046/flashback-sunset-cabin-taylor-smyth-architects/>



Conceptual Design

During the conceptual design phase I began to synthesize ideas from site analysis, program requirements, and precedent studies to create a design concept. Messy sketches littered my desk as I scribbled out site planning strategies. Plan options transformed into small-scale site models. Several architectural strategies were considered.

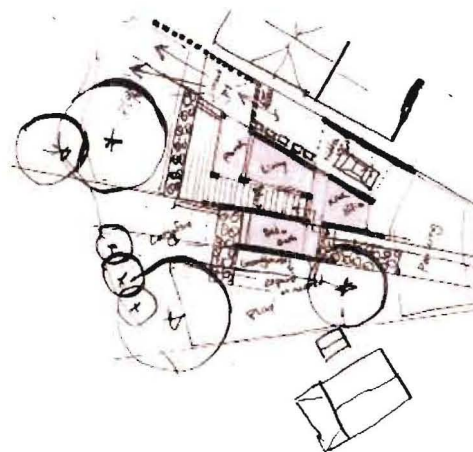
I felt that it was always important that the clients take an active part in the conceptual design process, thereby enabling them to take ownership of the project. Correspondence with my clients was primarily through phone and email. Drawings were frequently sent to the clients, who provided constant feedback. This dynamic interaction allowed us to discuss existing ideas, propose new ideas, and create an overall vision for the design.



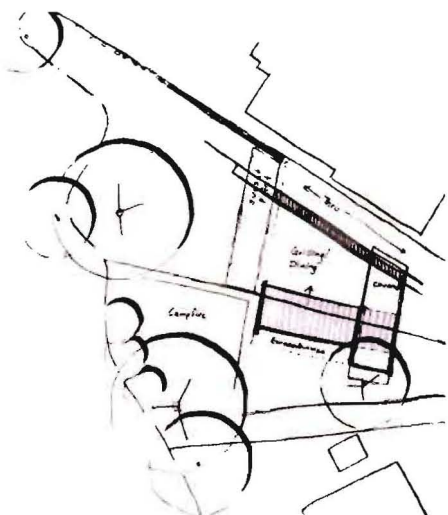
Transition from Open to Enclosed



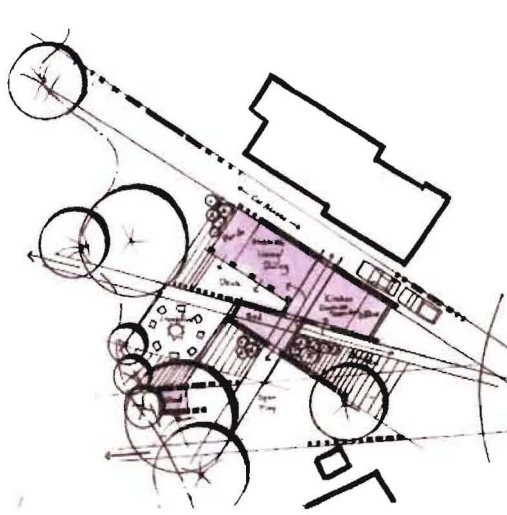
Private Zones Created by Indirect Path



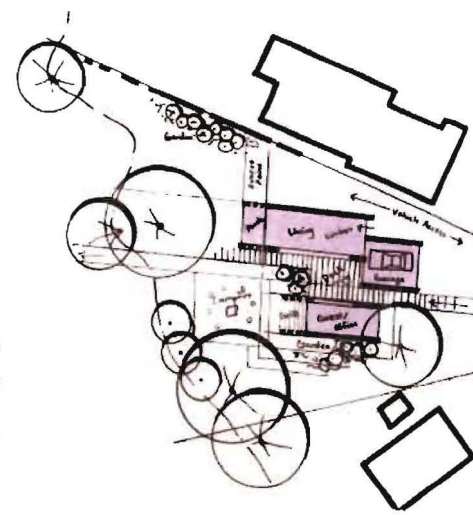
Directing Views with Programmed Wings



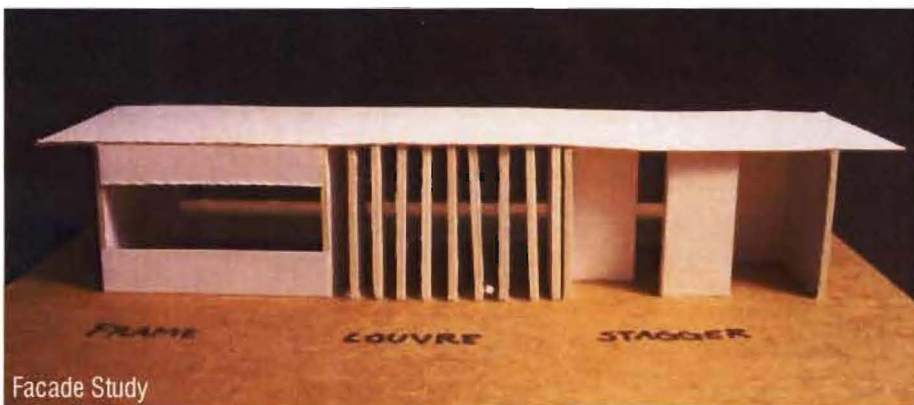
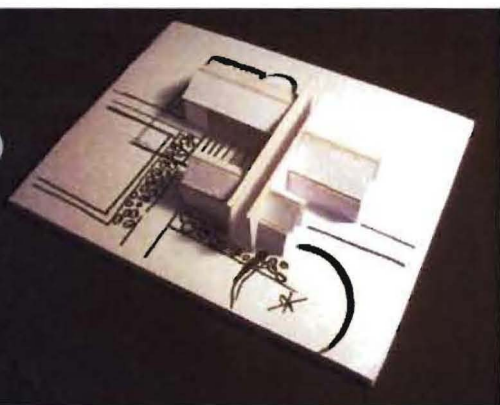
Thick Wall Concept



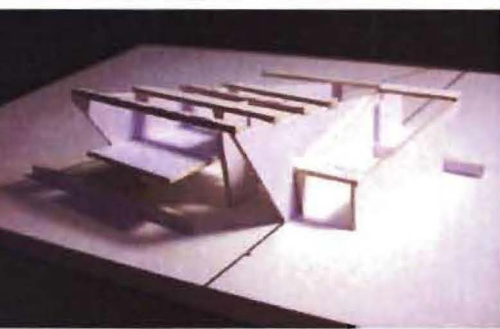
Diagonal Axes



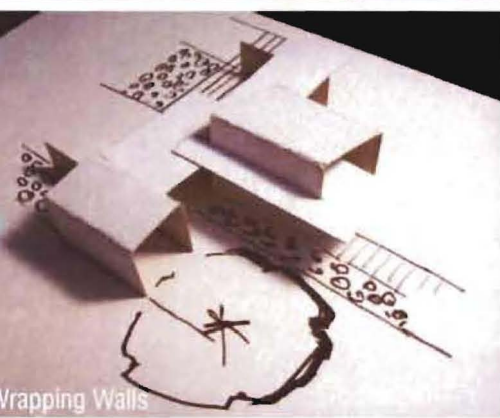
Division of Program to Enclose Deck



Facade Study



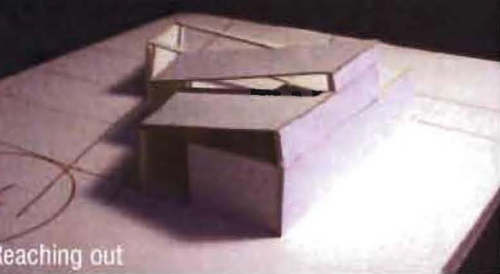
Extending Walls



Wrapping Walls



Indoor / Outdoor Room, "Thick Wall"



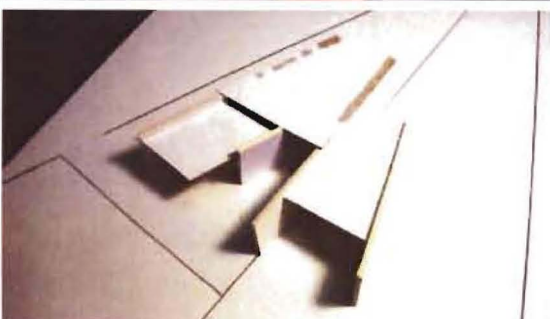
Reaching out



Directing Views



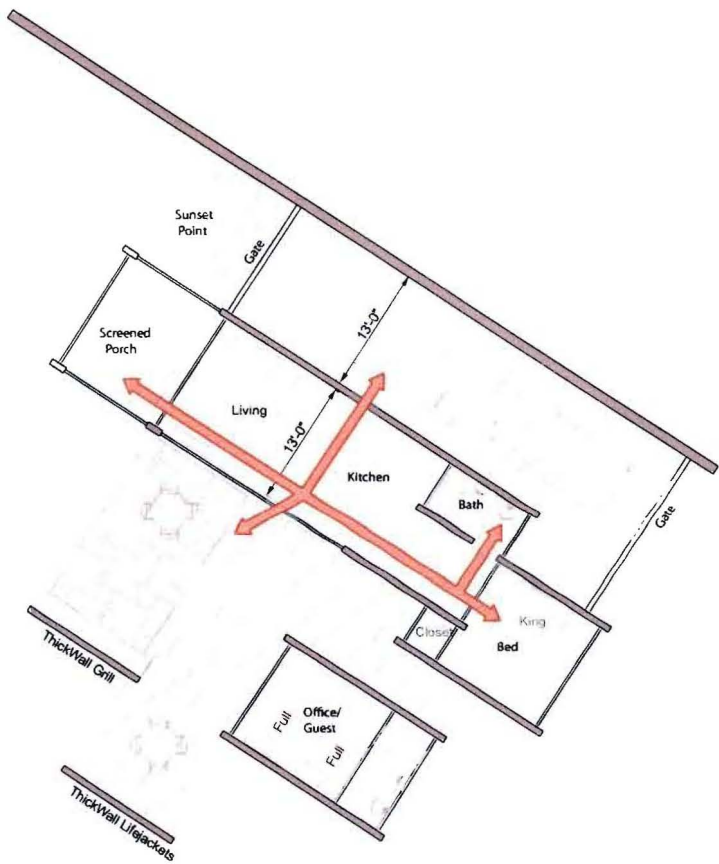
Preparation of Program



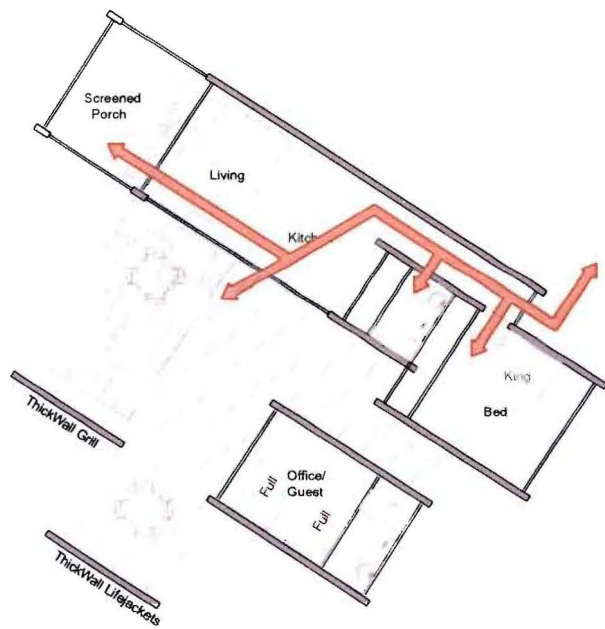
Schematic Design

It was during the schematic design phase that I arrived at a clear and realistic concept to present to the client. A basic plan and architectural style were chosen. The computer model created during this phase represented basic spaces, scale, and form of building components.

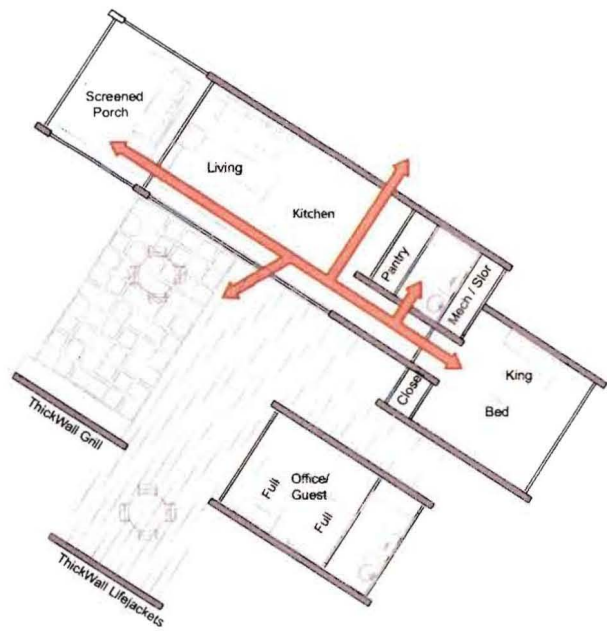
Floor Plan Options



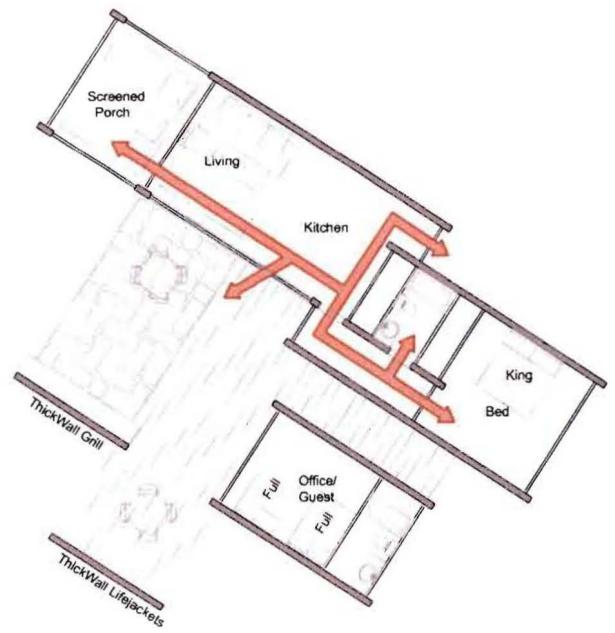
Tiny Closet. No narrow Hallways.



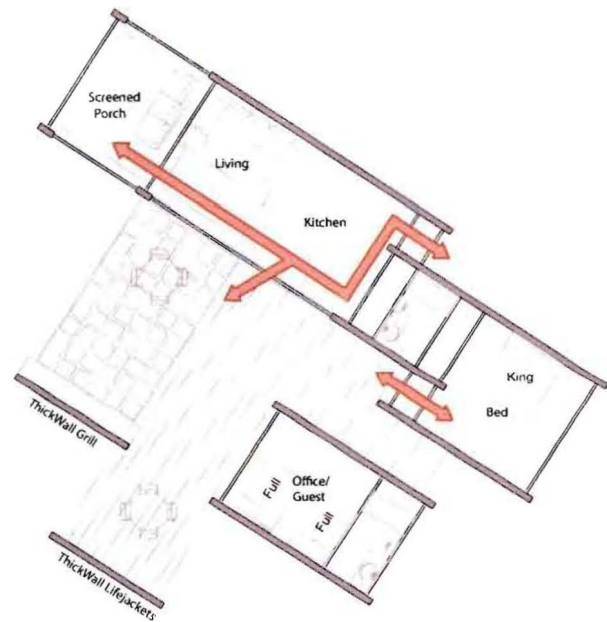
Big Closets. Narrow Hallway. Back Entrance.



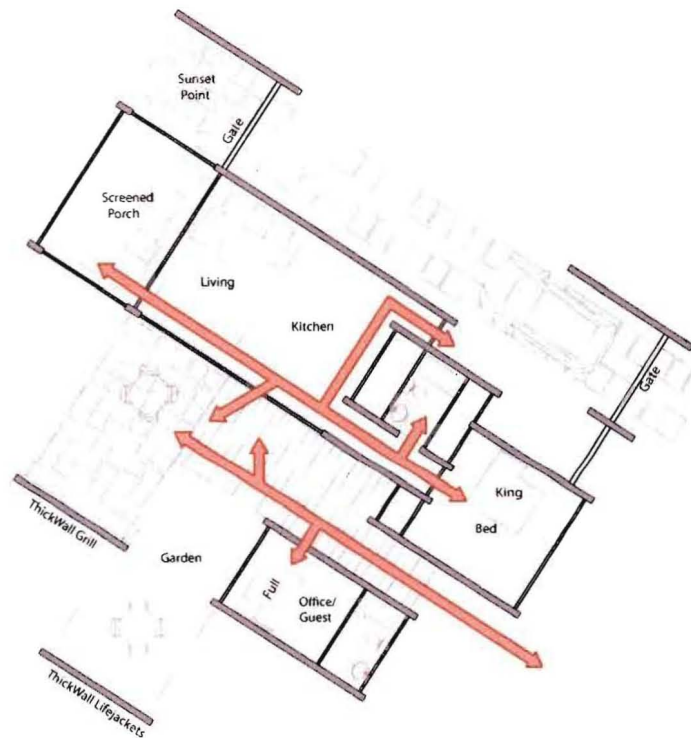
Split Closets. Short Hallway.



Big Closets. Narrow Hallway. Back Entrance.

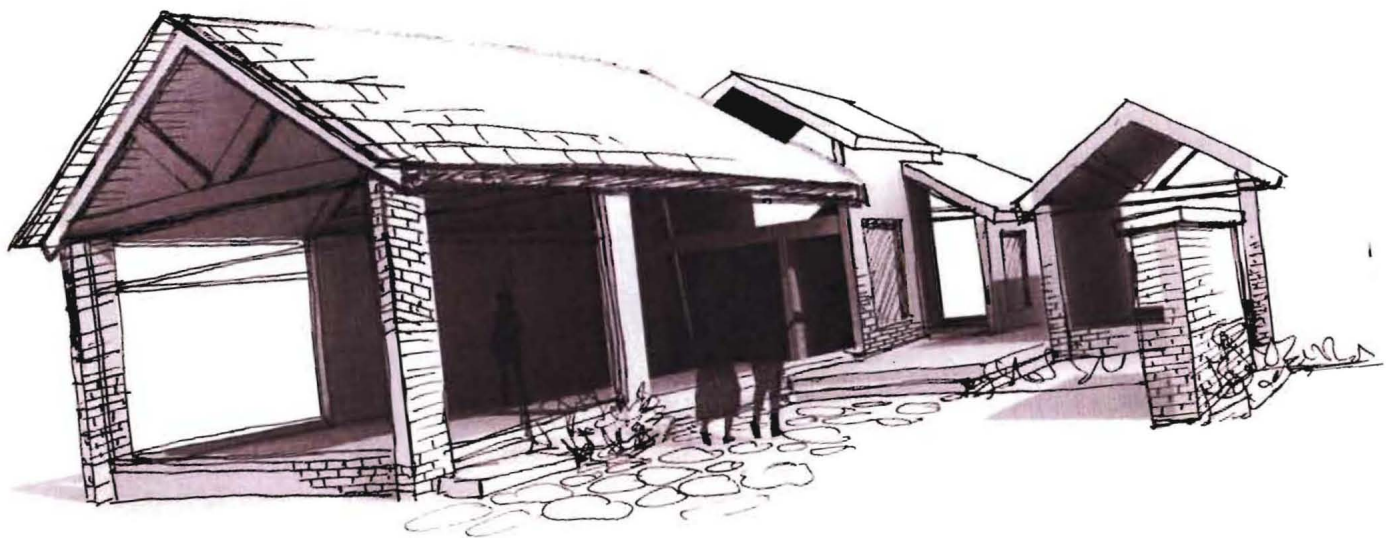
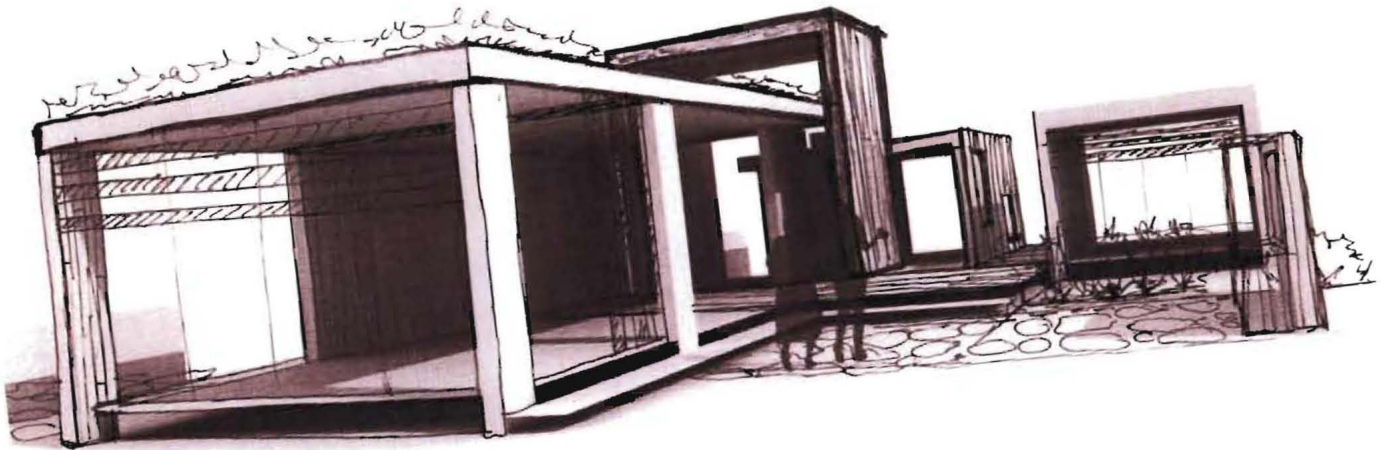
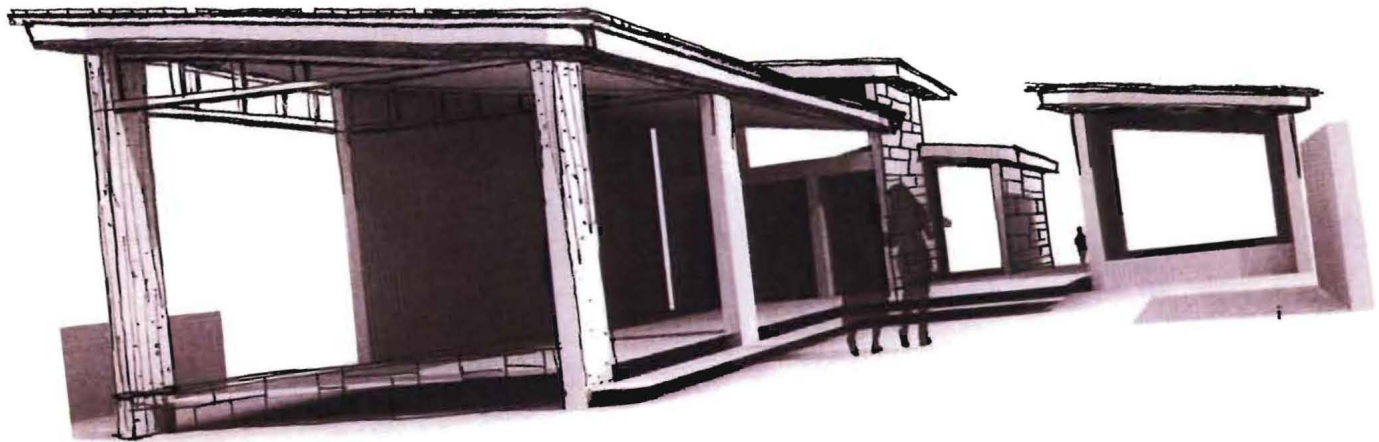


Symmetry. No Interior Connection. Back Entrance



Wider Living Space. Short Hallway. Back Entrance

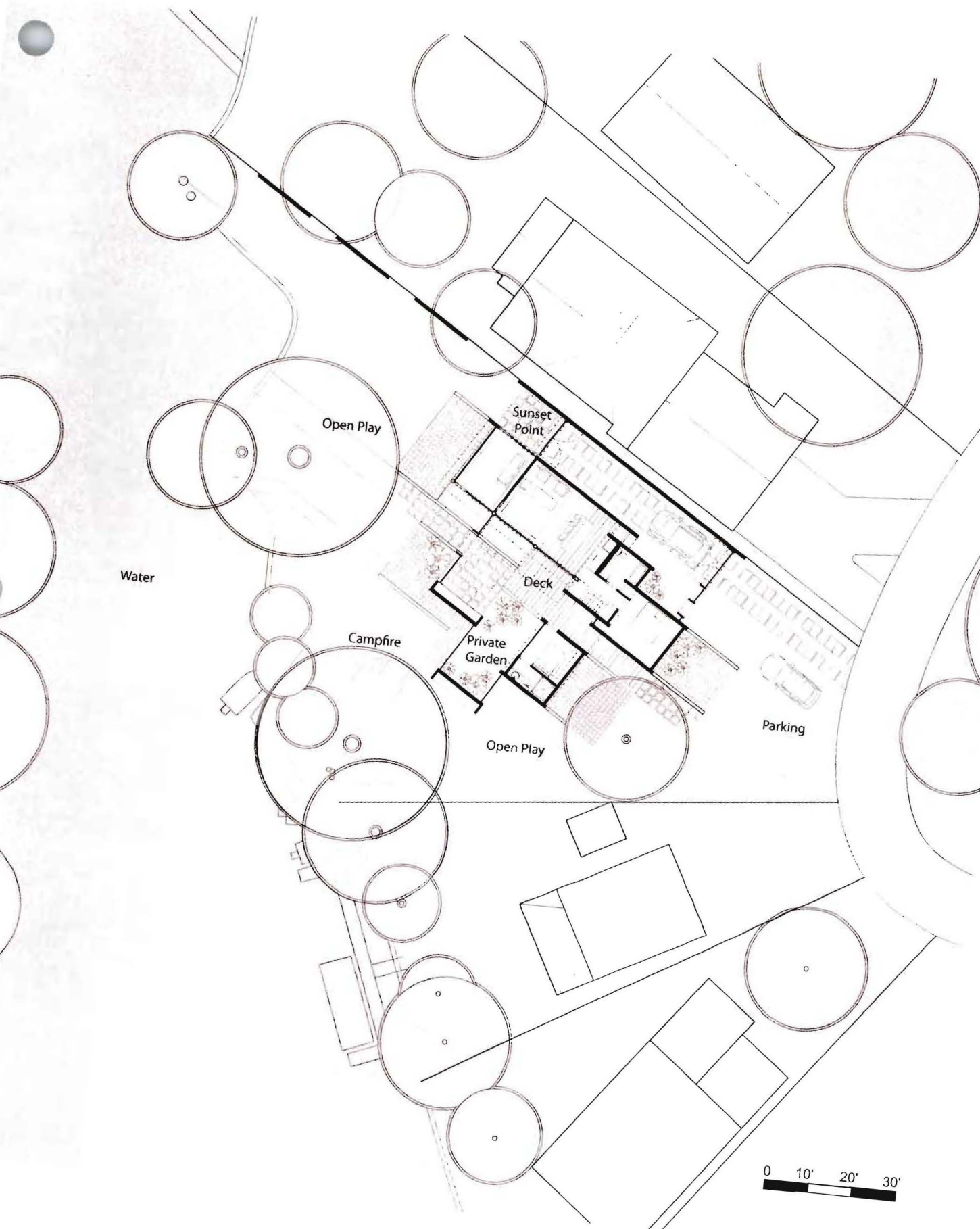
Roof Options



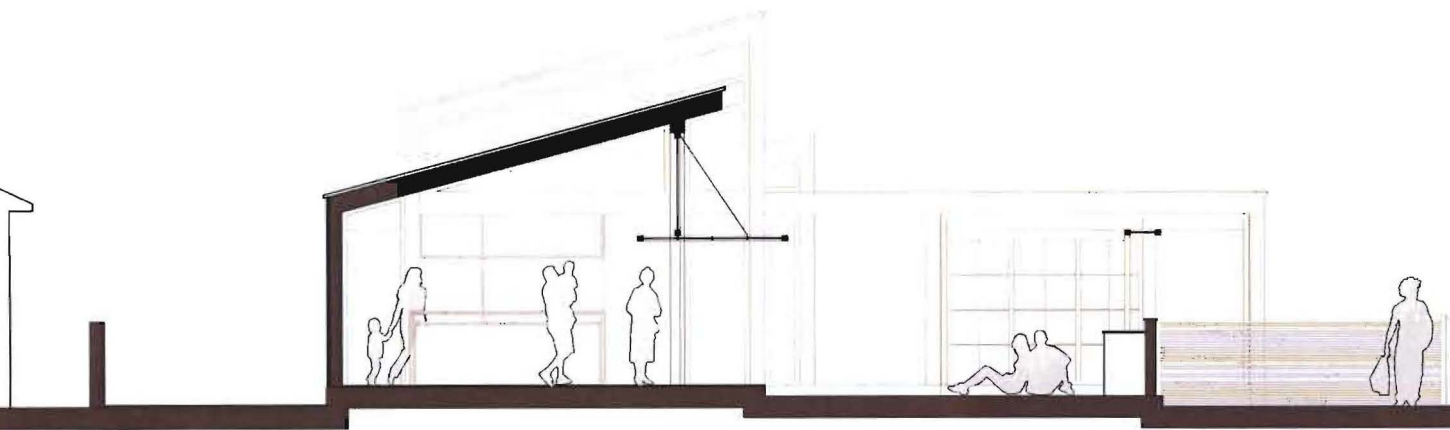


Design Development

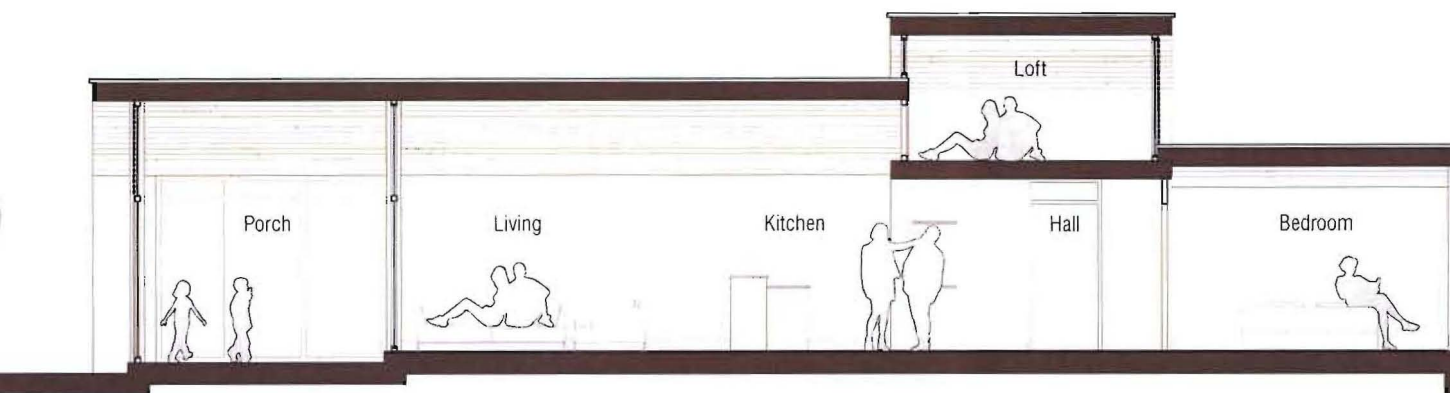
The more technical aspects of the design were developed in this phase, including materials and structural systems. Spaces were finalized and detailed. I worked to define and represent all important aspects of the project.







Building Section A

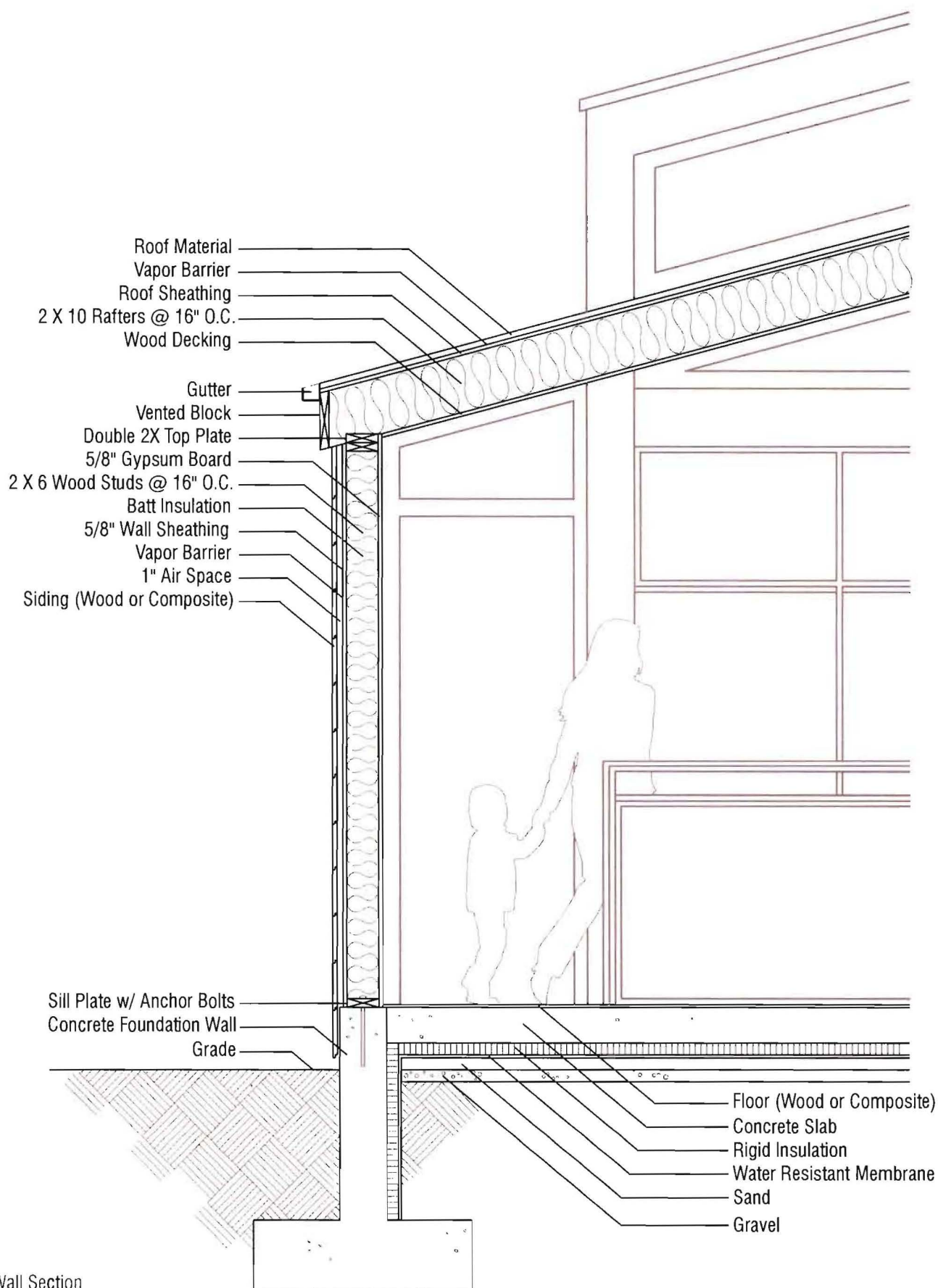


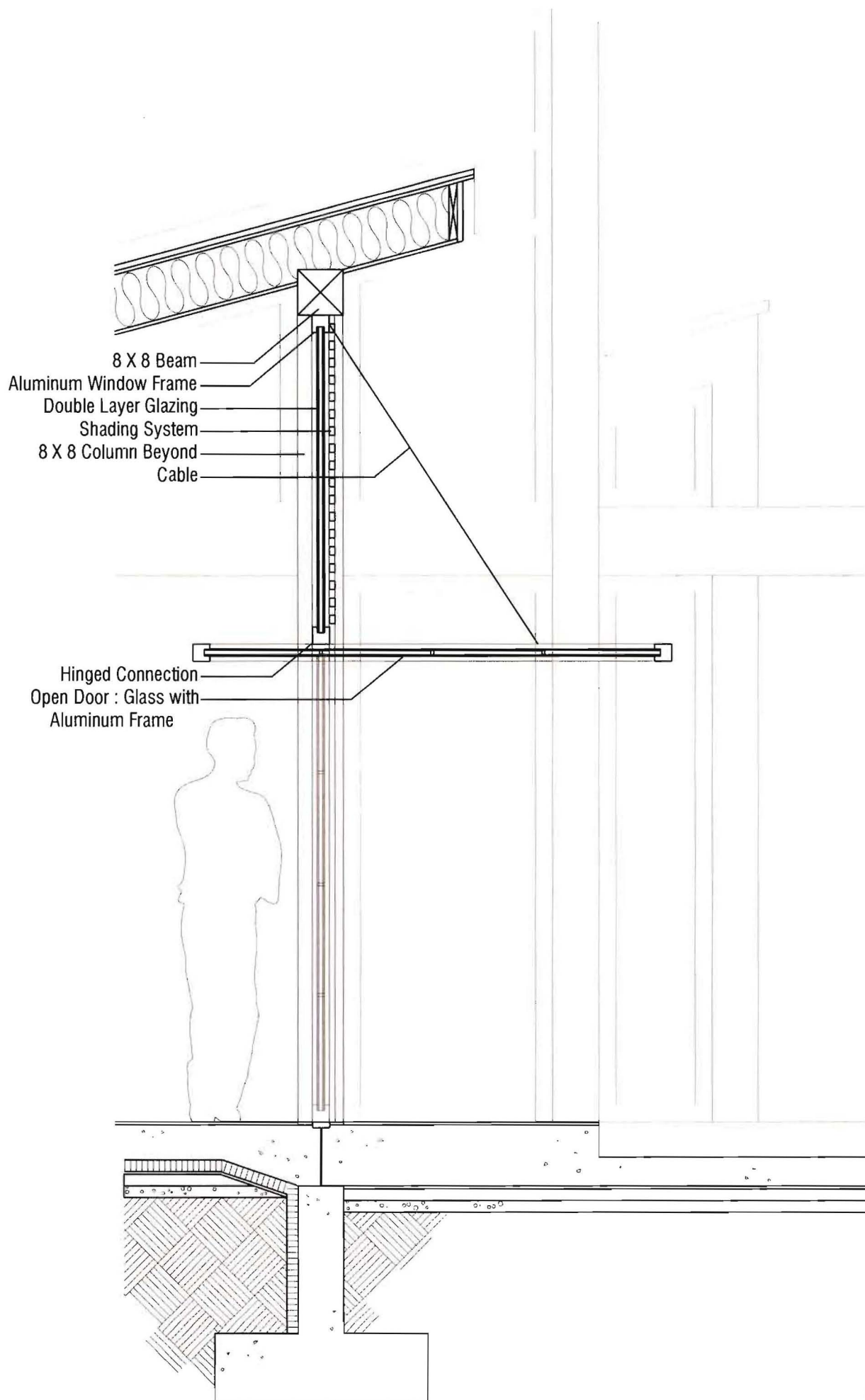
Building Section B



Southwest Elevation

0 2' 4' 6'





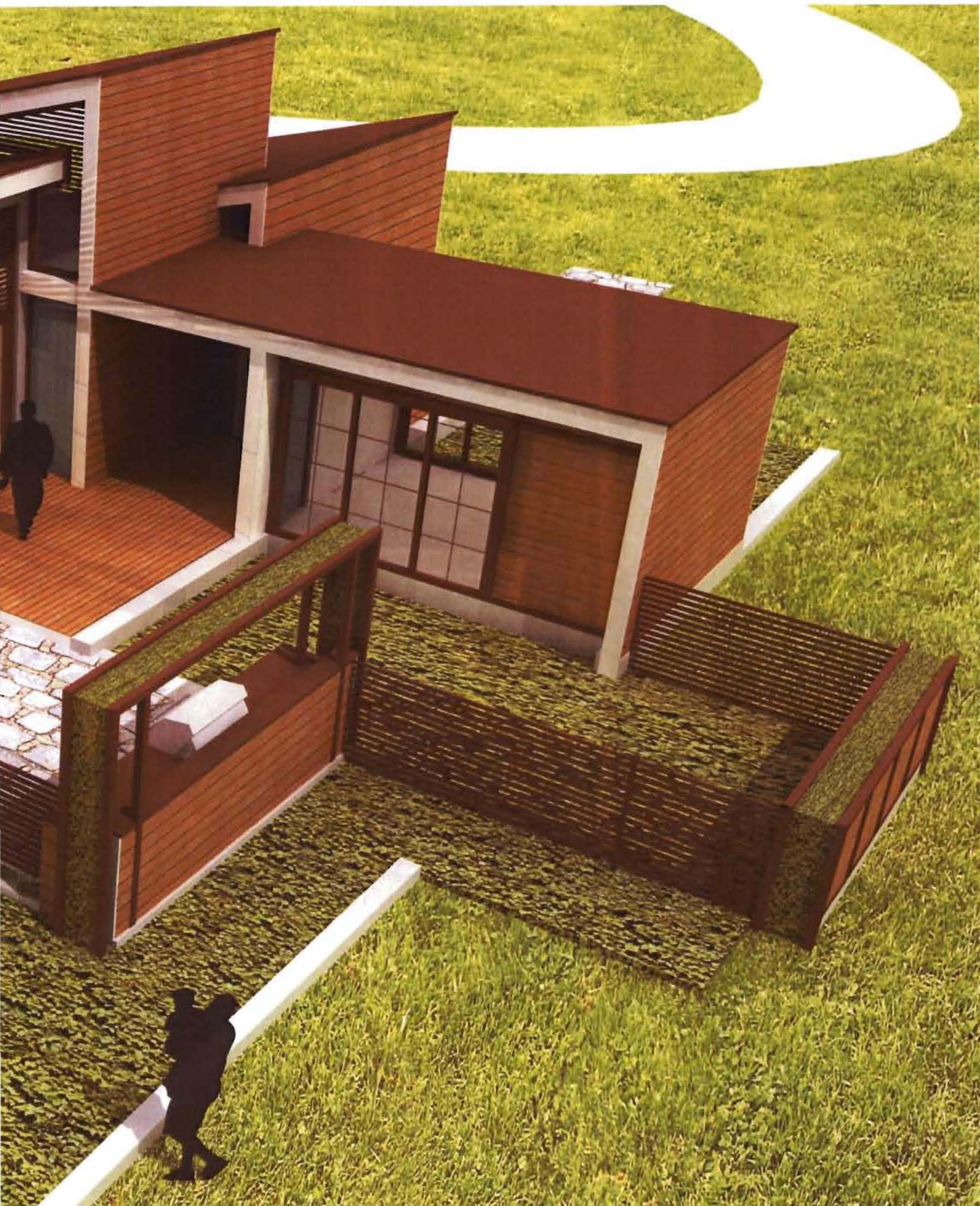
Presentation

The final phase of my project was to represent the design in a way that the client could comprehend. I created renderings that represent the building form and materials. I placed the renderings into site photos in order to give a sense of scale and relationship to context.

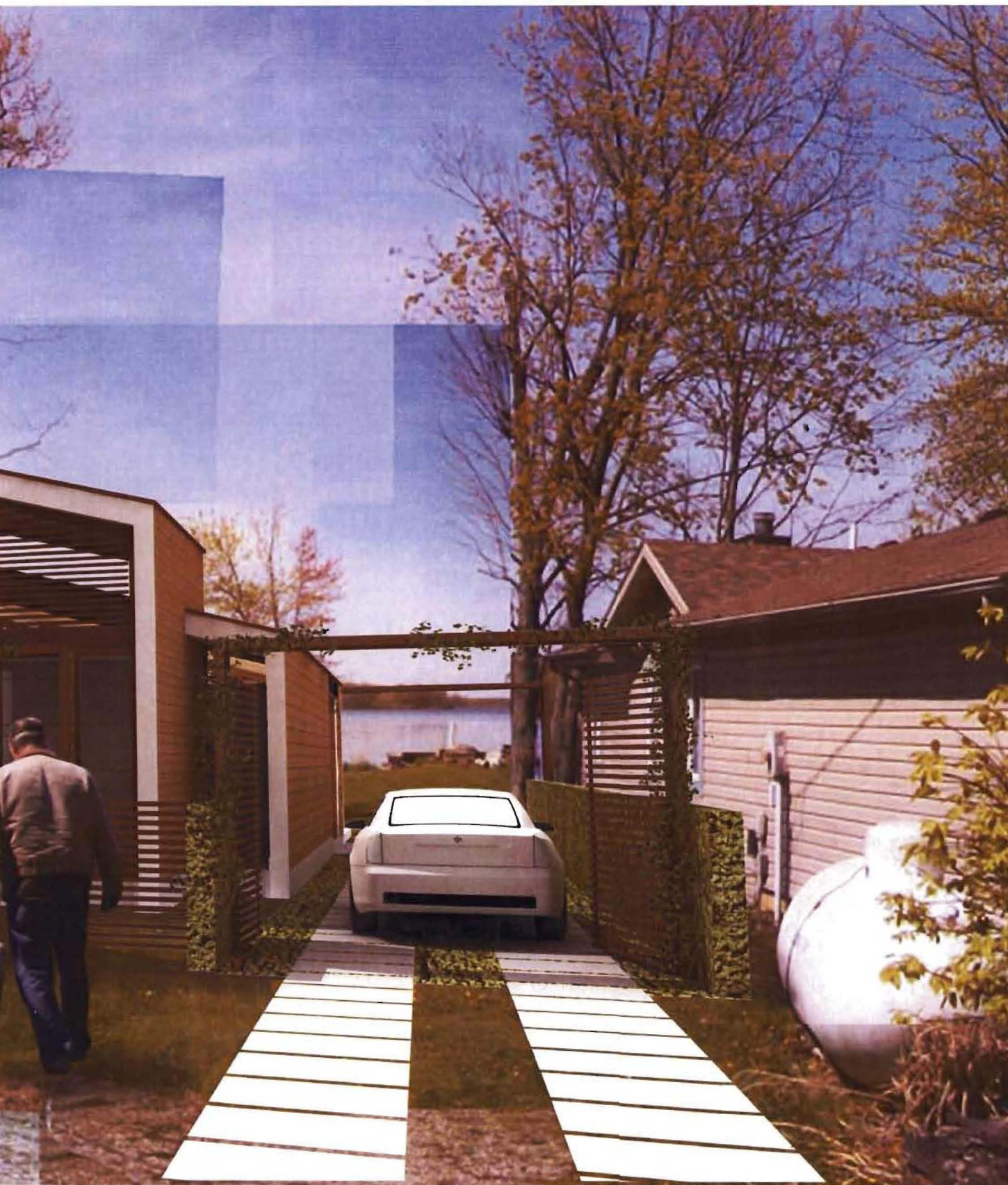




















Future Considerations

If this structure were to be built in the future, there is much more work to be completed. Many issues have not yet been worked out. Construction documents must be created, building systems must be specified, and exact materials must be chosen.

Formal construction drawings would include detail and casework drawings for restrooms and kitchen, details of the stairs to the loft, and details for built-in storage in bedroom and office. Current areas of concern include the restroom, washer/dryer area, and kitchen. The floor plan may have to be altered slightly to allow adequate room for mechanical systems in these areas. Mechanical, electrical, and plumbing system drawings and specifications would be included in the final drawing set. While a structural system has been proposed in this project, structural feasibility and cost effectiveness would need to be considered before construction drawings are finalized. For example, a 2X6 wall was proposed, but 2X4 wall framing may be adequate for greater cost effectiveness.

Water and septic lines, as well as electric lines need to be placed on the site. The structure would be serviced by a private well. The current well on site is an outdated 1963 hand-driven well. The new structure would require a new well, driven by a local company. It is preferred that the location of this well be relocated, so that it does not block the vehicle access along the north lot line. The site is serviced by Wolcottville city sewer. The grinder pump is shared between lots 3, 4, and 5. It is located at the street's edge on the south lot line. A sewer line needs to connect the grinder pump to the new structure.

Material pricing and purchasing would be a large task. There are a number of options for each material. Appearance, cost, and durability should be taken into account. Although the appearance of wood is preferred for the house exterior, composite material resembling wood may be a better choice for easy maintenance. For the deck, low-maintenance composite material should also be considered. Although there may be cheaper pavement options, stone is preferred for the ground of the outdoor dining area, for its appearance, texture, and durability. This stone can also be incorporated in the gardens and sunset point. Considering the high probability of wet and muddy feet, every surface material should be low-maintenance and easily cleaned.

Perhaps this project will someday be completed, whether in 2 years or in 20 years. I do hope this design has provided a good starting point.

Works Cited

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